old value B is smaller than the first determination threshold value B (B<A) and is set to be a value which is suitable for determining the occupant to be an adult within the posture range of frequently made by an adult occupant.

[0028] In Step **107**, when the detection load value Ws is determined to be less than the second determination threshold value, the CPU **26** proceeds to Step **108** to determine whether the detection load value Ws is kept to be less than the second determination threshold value B for a second predetermined time T2. The second predetermined time T2 is the time for delay process to prevent determination condition change due to temporally decrease of the detection load value Ws. When the detection load value Ws is kept to be less than the second determination threshold value B for the second predetermined time T2, the CPU proceeds to Step **109** to change the occupant determination from "adult" to "child". In more detail, the occupant determination is changed from adult determination to child determination and is, memorized in the memory and renewed. The CPU then temporarily stops its processing.

[0029] When the detection load value Ws is equal to or more than the second determination threshold value B at Step **107**, or when the detection load value Ws does not continue to keep the value (less than the value B) for the second predetermined time T2 at Step **108**, the CPU stops its processing. Accordingly, the occupant determination is kept to the condition determined at the previous routine (adult determination).

[0030] According to the present embodiment as mentioned above, a hysteresis is provided for changing the occupant determination (changing the adult or child occupant determination) by setting the two different determination threshold values A and B (A>B). This will enable the prevention of erroneous determination, which may occur in the case when the detection load value decreases during adult occupant determination. In other words, during the adult occupant determination, even when the detection load value Ws decreases, the adult occupant determination is not changed to child occupant determination unless the detection load value Ws becomes less than the second determination threshold value B which is smaller than the first determination threshold value A. On the other hand, during child occupant determination, even when the detection load value Ws increases, the child occupant determination is not changed to adult occupant determination unless the detection load value Ws becomes more than or equal to the first determination threshold value A which is greater than the second determination threshold value B.

[0031] According to the present embodiment of the invention, the following features and advantages can be obtained.

[0032] (1) The occupant determination is changed from child to adult when the detection load value Ws is greater than the first determination threshold value A and is changed from the adult determination to child determination when the detection load value Ws becomes smaller than the second determination threshold value B (<A). In other words, a hysteresis is provided for changing the determination either from child or adult to adult or child. If the occupant determination is an adult, the determination will not be changed to a child unless the detection load Ws is within the second determination threshold value B which is set to the load value corresponding to the various postures frequently made by the adult occupant being seated. If the adult occupant is determined, the adult determination is kept without change when the adult occupant moves to reduce the detected load by changing the posture (changing seated position or the like) independently of the time. Further, even when the detection load value Ws corresponding to adult weight is close to the first determination threshold value A during adult determination, the determination change caused by the change of weight due to change of the posture of the occupant or the change of the weight due to the vehicle vibration can be prevented to improve the accuracy of occupant determination.

[0033] (2) The delay time is provided upon changing either from child or adult to adult or child determination to prevent an undesired determination change caused by a temporal load change.

[0034] The present embodiment is not limited to the above and can be modified. For example, the predetermined times T1 and T2 can be set to the same time period (T1=T2)

[0035] According to the present embodiment, the pair of load sensors **21** and **22** are provided on right and left-front sides of the seat body **1** and another pair of load sensors **23** and **24** are provided on right and left-rear sides of the seat body **1**. However, the number and the arrangement of the load sensors may be modified. It is only required to arrange one or more load sensors at a predetermined position on the seat body **1** and to perform the occupant determination based on the detection load value from the load sensors.

[0036] Each shape of the sensor brackets **7** and **8** provided on front and rear sides of the seat body **1** may be modified as far as the sensor brackets **7** and **8** are surely bent in response to a seat weight (i.e. load applied to the seat).

[0037] The principles, preferred embodiment and mode of operation of the present invention have been described in the foregoing specification. However, the invention, which is intended to be protected, is not to be construed as limited to the particular embodiment disclosed. Further, the embodiment described herein is to be regarded as illustrative rather than restrictive. Variations and changes may be made by others, and equivalents employed, without departing from the spirit of the present invention. Accordingly, it is expressly intended that all such variations, changes and equivalents which fall within the spirit and scope of th present invention as defined in the claims, be embraced thereby.

What is claimed is:

1. An occupant determination device for a vehicle seat comprising:

a load sensor provided at a seat body;

a controller for calculating a detection load value based on a load value output from the load sensor and determining whether an occupant seated on the vehicle seat is adult or a child based on the detected load value,

wherein a hysteresis is provided for changing the occupant determination from either a child or an adult to an adult or a child.